

ABSTRACT

Disclosed is a method for gettering a transition metal impurity diffused in a silicon crystal at ultra high-speeds to form deep impurity levels therein. The method comprises codoping two kinds of impurities: oxygen and carbon, into silicon, and thermally annealing the impurity-doped silicon to precipitate an impurity complex of an atom of the transition metal impurity, the C and the O, in the silicon crystal, so that the transition metal impurity is confined in the silicon crystal to prevent the ultra high-speed diffusion of the transition metal impurity and electrically deactivate deep impurity levels to be induced by the transition metal impurity. The present invention makes it possible to produce a silicon semiconductor device free of adverse affects from a transition metal impurity, such as Co, Ni or Cu, mixed in a silicon crystal during a process of forming the silicon single crystal, or such as Cu mixed in a silicon wafer during a process of printing a Cu wiring, which has not been able to be completely eliminated from the silicon crystal through conventional techniques.